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Assessment of knowledge and awareness among nurses of a tertiary care hospital regarding the management of acute poisoning: A cross-sectional study

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ABSTRACT

Background: Poisoning is a serious global health issue that results in a high rate of morbidity and death. The distribution of poisoning agents determines the patterns of acute poisoning in different locations. **Aim:** This study aims to assess the knowledge and awareness regarding the management of acute poisoning among nurses in Saudi Arabia, so that the participants with unsatisfactory knowledge could be trained to manage such cases more efficiently. **Methods:** A cross-sectional study included a self-administered questionnaire. A seven-question questionnaire to ascertain the relationship between the participants' total knowledge score and independent variables such as age, education, experience, and training status. **Results:** 408 nurses with a mean age of 38.6 years ($SD = 8.1$) completed the questionnaire. Age and experience were significant predictors of the total score, with p -values of 0.034 and <0.001 , respectively. Specifically, age was found to have a negative association ($\beta = -0.109$), whereas experience had a positive association ($\beta = 0.326$) with the total score. In contrast, education ($\beta = -0.027$, $p = 0.636$) and training ($\beta = 0.042$, $p = 0.659$) were not significantly associated with the total score. **Conclusion:** According to our findings, experience and age were both significant predictors of the final score.

Keywords: Acute poisoning, nurses, knowledge, awareness.

1. INTRODUCTION

Acute poisoning is an international issue that has been more prevalent over the past several years and is a leading cause of morbidity and death worldwide (Ramesha et al., 2009). Emergency rooms frequently deal with patients rushing to the hospital at any given time, regardless of the type or quantity of poisoning. To provide the best possible care for patients, the accident and emergency team must possess the knowledge, abilities, and self-worth to conduct critical assessments and provide immediate treatment (Chatterjee et al., 2020). The distribution of poisoning agents determines the patterns of acute poisoning in different locations. According to South African research Malangu and Ogunbanjo, (2009), 59% of poisoning cases were unintentional. In India, poisoning is more likely in men (Gupta et al., 2016).

Although admissions connected to poisoning account for around 1% of emergency visits in Saudi Arabia, a closer examination of the country's data indicates that the severity and potentially deadly consequences of these instances are highly concerning (Tobaiqy et al., 2020). Since many of these incidents go unreported, it's possible that the actual numbers may be far higher (Liakoni et al., 2019). In cases of poisoning, 64.7% of nurses demonstrated euthanasia (Rutto et al., 2012). In another study, higher diploma and degree nurses scored 7.4 on the acute poisoning knowledge practices mean score, compared to 7.2 for certificate nurses (Mbarouk et al., 2017). Most accidental poisonings have many underlying causes. There are many challenges, from simple negligence that injures adults and children to more unusual offenders like snake or scorpion stings (Müller and Desel, 2013).

Thankfully, improvements in analytical toxicology and the ease of access to poison information centers have enabled physicians to assess the danger of poisoning more precisely (Kumari et al., 2023). Treatment approaches might differ; some may merely call for supportive care, while others may require specialized antidotes, the knowledge and experience needed to be consistent, and so on (Tobaiqy et al., 2020). Overcrowded emergency rooms and outpatient clinics can create delays in treating life-threatening emergencies like poisoning. Thus, nurses could be crucial in these situations. They need to know enough for this. There aren't many studies on topic available in Saudi Arabia. Therefore, this study was conducted to investigate the knowledge and awareness regarding managing acute poisoning among nurses in Saudi Arabia.

2. METHODOLOGY

Study design and setting

This quantitative cross-sectional study included a self-administered questionnaire. There were many places in Saudi Arabia where the online survey was conducted.

Study duration

Five months.

Population

Inclusion criteria

Nurses who were readily accessible to the hospital.

Nurses who had given informed consent to participate in the study.

Exclusion criteria

Nurses who were doing introductory training courses.

Nurses who were on leave.

Nurses who were not directly involved in immediate patient management like working in the radiology department.

Data collection tool and technique

The questionnaire design had three sections (A, B, and C). The research participants' sociodemographic details, level of education, experience, and level of training in managing poisoning were all covered in Section A. There were seven questions in Section B about

general poisoning knowledge. Every correct response scored 1, and every wrong response received 0. Each participant received a score between 0 and 13 based on how they answered the 13 items in Section B.

Ten questions in Section C of the questionnaire were the first management of poisoning; each correct answer will receive a score of 1, and each incorrect response will receive a score of 0. Each participant received a score between 0 and 10 based on how they answered the ten items in Section C. Their overall rating ranged from 23 to 0. A score of more than 75% indicates excellent knowledge, between 50% and 75% suggests passable understanding and a score of less than 50% suggests either inadequate or subpar knowledge.

Statistical analysis

The information was examined using the mean and percentage after being input into an Excel sheet (Microsoft Corporation, Redmond, WA). A significant p-value is one that is less than 0.05. The SPSS version 22 software (IBM Corp., Armonk, NY) was used for both bivariate and multivariate regression analyses to ascertain the relationship between the independent factors (training, age, experience, and education) and the dependent variable (total score).

3. RESULTS

The study sample consisted of 408 participants with a mean age of 38.6 years ($SD = 8.1$). Most participants were female (342, 83.8%). For the living region, 91.2% of the participants were from the western region. Regarding education, 126 participants (30.9%) held a diploma, 270 (66.2%) had a bachelor's degree, and 12 (2.9%) had a PhD. Regarding experience in poisoning management, 60 participants (14.7%) reported having experience. Additionally, 42 participants (10.3%) received training in poisoning management. The demographics of the participants are shown in (Table 1). Nurses' responses to general knowledge and initial management of acute poisoning are shown in (Table 2).

In the section on general knowledge of poisoning, 13.2% of nurses obtained a score of less than 50%, while the majority, 60.3%, scored between 50% and 75%. A total of 25% of nurses scored more than 75%. Similarly, in the section on knowledge of initial management of acute poisoning, 4.4% of the nurses obtained a score of less than 50%, 50% between 50% and 75%, and 45.6% of the participants scored more than 75%. In the multivariate analysis, the relationship between the independent variables and the total score was further examined. The model produced an R-value of 0.246 and an R^2 value of 0.061, indicating that the independent variables (age, experience, education, and training) together account for 6.1% of the variance in the total score.

Age and experience were significant predictors of the total score, with p-values of 0.034 and <0.001, respectively, according to the results shown in (Table 3). Specifically, age was found to have a negative association ($\beta = -0.109$), whereas experience had a positive association ($\beta = 0.326$) with the total score. In contrast, education ($\beta = -0.027$, $p = 0.636$) and training ($\beta = 0.042$, $p = 0.659$) were not significantly associated with the total score. These findings suggest that while age and experience play significant roles in determining the total score, education and training do not considerably impact this model.

Table 1 Demographics of the participants

Variables	Sample size (n=408)	
Age, mean (SD)	38.6 (8.1)	
Gender, N (%)	Male	66 (16.2)
	Female	342 (83.8)
Living region, N (%)	Western	372 (91.2)
	Southern	18 (4.4)
	Middle	12 (2.9)
	Northern	6 (1.5)
Highest level of education, N (%)	Diploma	126 (30.9)
	Bachelor's degree	270 (66.2)
	PhD	12 (2.9)
Experience in poisoning management	No	348 (85.3)
	Yes	60 (14.7)

Training in poisoning management	No	366 (89.7)
	Yes	42 (10.3)

Table 2 Nurses' response to general knowledge and initial management of acute poisoning

Variables	Scores	Frequency (n=212)	Percentage (%)
General knowledge of poisoning	3-6	54	13.2
	7-10	246	60.3
	11-13	102	25
Knowledge of initial management of acute poisoning	2-4	18	4.4
	5-7	204	50
	8-10	186	45.6

Table 3 Results of multivariate analysis

Hypothesis	Regression Weights	β -coefficient	t	P-value
H ₁	Age - Total score	-0.109	-2.125	0.034
H ₂	Experience - Total score	0.326	4.065	<0.001
H ₃	Education - Total score	-0.027	-0.474	0.636
H ₄	Training - Total score	0.042	0.442	0.659

4. DISCUSSION

This study was conducted to find out the knowledge and awareness regarding the management of acute poisoning among nurses so that the participants with unsatisfactory knowledge could be trained to manage such cases more efficiently. This quantitative cross-sectional study will include a self-administered questionnaire. A total of 408 participants with a mean age of 38.6 years completed the questionnaire. About 83.8% of the participants were female. For the living region, 91.2% of the participants were from the western region. Regarding education, 66.2% had a bachelor's degree. In terms of experience in poisoning management, only 14.7% reported having experience. Additionally, 10.3% of the participants received training in poisoning management.

Our results show that age and experience were significant predictors of the total score. Specifically, age was found to have a negative association ($\beta = -0.109$), whereas experience had a positive association ($\beta = 0.326$) with the total score. In contrast, education and training were not significantly associated with the total score. These results imply that education and training have little bearing on this approach, but age and experience are important factors in calculating the overall score. According to our survey, the majority of nurses (38.2%) have a Bachelor of Science degree, which is in line with a previous study (Kumari et al., 2023). The majority of the nurses (43.8%) an unsatisfactory level of knowledge about acute poisoning (Beyene, 2017).

Regarding the knowledge, our results were like the findings reported in the studies done in Kenya Mbarouk et al., (2017) and Ethiopia (Hisaka et al., 2021). However, 42.4% of the study participants had an acceptable level of knowledge and only 13.6% had good knowledge. Of the nurses, 45.2% lacked sufficient knowledge and the majority (48.1%) had an appropriate level of understanding for the initial care of acute poisoning. Only 6.6% of nurses, however, possessed good expertise. According to a Japanese study, stroke care unit nurses' awareness and actual practice differed significantly (Chua et al., 2023). Our results contradict a cross-sectional study conducted in Ethiopia and an online survey published in Singapore, which revealed that nurses with more education or emergency experience had higher knowledge ratings (Adal et al., 2023; Abebe et al., 2019).

A study conducted in Ethiopia found a high statistically significant correlation between nurses' general poisoning knowledge and their professional qualifications (Mohamed et al., 2015). Additionally, our findings contradict a 2012 study conducted in Egypt that found a substantial correlation between nurses' general understanding of poisoning management and training in the primary therapy of acute poisoning (Mohamed et al., 2015). The study's limitations include its limited evaluation of tertiary care hospital nurses'

awareness and competence of acute poisoning management. However, their mindset and methods for treating acute poisoning were not considered.

Because this cross-sectional study may not have had enough time to document all potential causes and other contributing variables, future research may examine the components connected to sepsis knowledge. The study also includes a self-administered questionnaire to gather subjective data, and participant responses may differ based on their psychological and emotional states. The results of the study may be affected by this. Finally, the study's cohort was selected at random from a particular setting and within a constrained age range, which would have reduced the generalizability of the results. Therefore, more nationwide research should be conducted to evaluate other aspects of nurses' awareness and understanding of tertiary care hospital acute poisoning management.

5. CONCLUSION

Most participants were female from the western region. According to our findings, experience, and age were both significant predictors of the final score. In particular, training was not substantially correlated with the final score, whereas experience was positively correlated with age. These findings suggest that while age and experience play significant roles in determining the total score, education and training do not considerably impact this model.

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Ethical approval

The ethical guidelines for Human Subjects were closely followed in the study by the authors from the Medical services center, King Abdul-Aziz University, Saudi Arabia.

Informed consent

Written & Oral informed consent was obtained from individual participants included in the study.

Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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